

Oracle® Database

Release Notes

12c Release 1 (12.1) for Linux

E51263-17

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This document contains information that was not included in the platform-specific or product-specific documentation for this release. This document supplements *Oracle Database Readme*.

This document may be updated after it is released. You can check for updates to this document and view other Oracle documentation at

<http://docs.oracle.com/en/database/database.html>

This document contains the following topics:

- [Certification Information](#)
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1 Certification Information

The latest certification information for Oracle Database 12c is available on My Oracle Support at

<https://support.oracle.com>

SUSE Linux Enterprise Server 12

Starting with Oracle Database 12c Release 1 (12.1.0.2), SUSE Linux Enterprise Server 12 is certified on Linux x86-64 systems. ACFS and ADVM are not supported.

Oracle Linux 7 and Red Hat Enterprise Linux 7 Support Information on Linux x86-64

Starting with Oracle Database 12c Release 1 (12.1.0.2), Oracle Linux 7 and Red Hat Enterprise Linux 7 are supported on Linux x86-64 systems.

Starting with Oracle Database 12c Release 1 (12.1.0.2), Oracle Linux 7 is supported on the following distributions for Linux x86-64:

- Oracle Linux 7 with the Unbreakable Enterprise kernel: 4.1.12-61.el7uek.x86_64 or later
- Oracle Linux 7 with the Unbreakable Enterprise kernel: 3.8.13-33.el7uek.x86_64 or later
- Oracle Linux 7 with the Red Hat Compatible kernel: 3.10.0-123.el7.x86_64 or later

Red Hat Enterprise Linux 7 Support Information on IBM: Linux on System z

Starting with Oracle Database 12c Release 1 (12.1.0.2), Red Hat Enterprise Linux 7 are supported on IBM: Linux on System z systems.

NeoKylin Linux Advanced Server 6.0

Starting with Oracle Database 12c Release 1 (12.1.0.2), NeoKylin Linux Advanced Server 6 is certified on Linux x86-64 systems.

Linux Containers

Starting with Oracle Database 12c Release 1 (12.1.0.2), Linux Containers are supported on Oracle Linux 7 and Oracle Linux 6 and certified on Linux x86-64 systems.

2 Latest Upgrade Information

For late-breaking updates and best practices about preupgrade, postupgrade, compatibility, and interoperability discussions, refer to Note 1462240.1 on My Oracle Support that links to the “Upgrade Companion” page at

<https://support.oracle.com>

3 Product Support

The list of products or features supported for Oracle Database 12c are as follows:

Database Smart Flash Cache Support

Database Smart Flash Cache is supported only on Oracle Solaris and Oracle Linux.

Oracle Automatic Storage Management Cluster File System (Oracle ACFS) and Oracle Automatic Storage Management Dynamic Volume Manager (Oracle ADVM) Support

Although Oracle ADVM supports raw disks in Oracle Automatic Storage Management disk groups, Oracle ADVM device special files created through raw(8) are not supported; Oracle ADVM only supports block device special files.

For the latest information about supported platforms and releases, see the Note 1369107.1 on My Oracle Support at

<https://support.oracle.com>

Oracle ASM Filter Driver Support

Oracle Automatic Storage Management Filter Driver (Oracle ASMFDF) is supported only on Linux x86-64.

4 Unsupported Products

In addition to the items listed in section 2.2, “Features Not Available or Restricted in This Release of Oracle Database 12.1.0.2,” in *Oracle Database Readme*, the following products and features are not supported:

Oracle Database Quality of Service Support

Oracle Database Quality of Service Management is not supported on IBM: Linux on System z.

Oracle Workload Manager Support

Oracle Workload Manager is not supported on IBM: Linux on System z.

ORAchk Audit Tool Support

ORAchk (Oracle RAC Configuration Audit Tool) is not supported on Oracle Linux 7 and Red Hat Enterprise Linux 7.

Oracle Automatic Storage Management Cluster File System (Oracle ACFS) and Oracle Automatic Storage Management Dynamic Volume Manager (Oracle ADVM) Support

Oracle Automatic Storage Management Cluster File System (Oracle ACFS) and Oracle Automatic Storage Management Dynamic Volume Manager (Oracle ADVM) are not supported on Linux Containers.

5 Content Specific to Linux Containers

The following content is specific to the Linux Container certification on Linux:

- [Preinstallation Requirements](#)
- [Installation, Configuration, and Upgrade Issues](#)
- [Other Known Issues](#)

5.1 Preinstallation Requirements

The preinstallation requirements include the following:

- [Operating System Requirements for Linux Containers](#)
- [Patch Requirements](#)
- [Enabling Real-Time Processes for Linux Containers](#)

5.1.1 Operating System Requirements for Linux Containers

Linux Container version 1xc-1.0.7-2.0.10 is supported on Oracle Linux 7 and Oracle Linux 6. Ensure that you have the following minimum kernel version installed on your system:

Operating System	Kernel Version
Oracle Linux 7	3.8.13-98.el7uek.x86_64 or later
Oracle Linux 6	3.8.13-98.el6uek.x86_64 or later

5.1.2 Patch Requirements

You must install patch 20920711 prior to enabling RT for Linux Containers.

5.1.3 Enabling Real-Time Processes for Linux Containers

To enable Real-Time (RT) processes on Linux Containers before you start an Oracle Grid Infrastructure installation, create the container with the RT option for Oracle Real Application Clusters (Oracle RAC) and Oracle Clusterware support:

```
lxc-create -n node_name -t oracle -B [brtfs|ext4] -- --release=6.latest  
--privileged=rt
```

For example:

```
lxc-create -n node3-lxc1 -t oracle -B btrfs -- --release=6.latest --privileged=rt
```

This command example creates one container named `node3-lxc1`, and uses the `btrfs` file system to host the container.

Note: If you have specified the Linux Container setting file, then ensure that you review each setting line in the file.

5.2 Installation, Configuration, and Upgrade Issues

Review the following section for information about issues that affect Linux Containers:

- [Hard Limit Value Error in the Prerequisite Screen During the Installation](#)
- [Shared Memory File System Verification Fails on Linux Containers](#)
- [Kernel Warnings in the Prerequisite Check Screen During the Installation](#)

5.2.1 Hard Limit Value Error in the Prerequisite Screen During the Installation

During a 12.1.0.2 installation, a hard limit value error occurs in the prerequisite screen.

Workaround:

You must not fix the hard limit value using the Fix and Check Again button. Instead, manually add the hard limit value 65536 to the entry `etc/security/limits.conf` on the host, log out and log in again, and then proceed with the installation. This may help to overcome any issue when the user tries to connect to the Linux container.

```
Install_User_Name    hard    nofile          65536
```

This issue is tracked with Oracle bug 20683209.

5.2.2 Shared Memory File System Verification Fails on Linux Containers

During a 12.1.0.2 Grid installation, the `/dev/shm` entry is not found in the `/etc/fstab` file of a Linux Container and the verification for the shared memory file system fails.

Workaround:

Check if the correct shared memory file system is mounted on the Linux Container host. Ensure that the `/dev/shm` mount area is of type `tmpfs` and is mounted with the following options:

- Set the `rw` and `execute` permissions on it.
- Do not set `noexec` or `nosuid` on it.

Use the following procedure to check the shared memory file system:

1. Check the current mount settings on the Linux Container host. For example:

```
$ more /etc/fstab |grep "tmpfs"
tmpfs          /dev/shm      tmpfs         defaults      0 0
```

Here is another example:

```
$ df -h /dev/shm
Filesystem      Size  Used Avail Use% Mounted on
tmpfs           29G  228K  29G   1% /dev/shm
```

2. If necessary, change the mount settings on the Linux Container host. For example, log in as root, open the /etc/fstab file with a text editor, and modify the tmpfs line:

```
tmpfs          /dev/shm      tmpfs         rw,exec       0 0
```

This issue is tracked with Oracle bug 22116467.

5.2.3 Kernel Warnings in the Prerequisite Check Screen During the Installation

During a 12.1.0.2 installation, kernel warnings appear in the prerequisite check screen due to missing /proc parameter files in the Linux container.

Workaround:

Add the missing /proc parameter files and set the recommended values in the host and proceed with the installation. The following /proc parameter files may only be set on the host and not for individual containers:

```
/proc/sys/fs/aio-max-nr
/proc/sys/net/core/rmem_default
/proc/sys/net/core/rmem_max
/proc/sys/net/core/wmem_default
/proc/sys/net/core/wmem_max
/proc/sys/net/ipv4/ip_local_port_range
```

Setting the values on the host according to Oracle recommended values automatically sets these values for all the Linux containers as well.

Note: Oracle Universal Installer may continue to show warnings despite setting the values on the host.

This issue is tracked with Oracle bug 20683257.

5.3 Other Known Issues

The following section contains information about issues related to Linux Containers:

- [The oclumon dumpnodeview Displays Negative Value for IFree Field](#)
- [DBCA Displays Incorrect Memory of the Host Server](#)
- [12.1.0.2 Oracle Restart Deinstallation Issue with the CRSDECONFIG Plugin on Oracle Linux 7 Container](#)
- [DBCA Unable to Identify File System Paths](#)

5.3.1 The oclumon dumpnodeview Displays Negative Value for IFree Field

In the Linux Containers environment, the inode value is not exported. As a result, the `oclumon dumpnodeview` command displays a negative value for the IFree (number of free inodes) field in its output.

Workaround:

None

This issue is tracked with Oracle bug 21150692.

5.3.2 DBCA Displays Incorrect Memory of the Host Server

When creating a database on Linux Container, Database Configuration Assistant (DBCA) incorrectly shows the available memory of the host server instead of the Linux Container on the Specify Configuration Options page. When you choose to allocate the percentage of memory based on the value shown, the database creation may fail in the case where total consumable memory for that Linux Container is less than the allocated memory.

Workaround:

You must allocate physical memory for the database according to the configuration of the Linux Container system.

This issue is tracked with Oracle bug 21546793.

5.3.3 12.1.0.2 Oracle Restart Deinstallation Issue with the CRSDECONFIG Plugin on Oracle Linux 7 Container

After successful deinstallation of 12.1.0.2 Oracle Restart, some of the files and directories are not removed.

Workaround:

After deinstalling 12.1.0.2 Oracle Restart, remove the following files and directories:

```
rm -r Oracle_Restart_Home
rm -r /OPT/ORCLFMAP
rm -r /etc/init.d/ohasd
rm -r /etc/init.d/ init.ohasd
rm -r /etc/systemd/system/oracle-ohasd.service
```

This issue is tracked with Oracle bug 20566514.

5.3.4 DBCA Unable to Identify File System Paths

When creating a database on Linux Containers, Database Configuration Assistant (DBCA) cannot identify the host owned file system paths in a Linux Container environment. This results in an error on the Storage Locations screen.

Workaround:

The storage location for the data file and flash recovery area must be owned by the Linux Container file system.

This issue is tracked with Oracle bugs 21890441 and 22011207.

6 Linking Applications with Oracle Client Libraries

You must use the dynamic Oracle client libraries to link the client code on Linux. Do not link the static Oracle client libraries.

7 Content Specific to Oracle Database 12c Release 1 (12.1.0.1)

The following content is specific to release 12.1.0.1:

- [Preinstallation Requirements for Release 12.1.0.1](#)
- [Installation, Configuration, and Upgrade Issues for Release 12.1.0.1](#)
- [Other Known Issues for Release 12.1.0.1](#)

7.1 Preinstallation Requirements for Release 12.1.0.1

Refer to the installation guides for the preinstallation requirements. Additional preinstallation requirements include the following:

- [Oracle Configuration Manager Support for SUSE Linux Enterprise Server 11](#)

7.1.1 Oracle Configuration Manager Support for SUSE Linux Enterprise Server 11

You must install the following packages to use Oracle Configuration Manager on SUSE 11:

```
glibc-devel-32bit-2.11.1-0.17.4
libgcc43-32bit-4.3.4_20091019-0.7.35
gcc-32bit-4.3-62.198
glibc-32bit-2.11.1-0.17.4
glibc-profile-32bit-2.11.1-0.17.4
glibc-locale-32bit-2.11.1-0.17.4
gcc43-32bit-4.3.4_20091019-0.7.35
```

7.2 Installation, Configuration, and Upgrade Issues for Release 12.1.0.1

Review the following section for information about issues that affect Oracle Database installation, configuration, and upgrade:

- [INS-10008 Error During Database Installation](#)

7.2.1 INS-10008 Error During Database Installation

While performing Oracle Grid Infrastructure installation, if the Grid Naming Service (GNS) and Dynamic Host Configuration Protocol (DHCP) options are selected and automatic execution of root script is enabled, the installation may fail with the following error:

```
[INS-10008] Session Initialization failed
```

Workaround:

Remove the directory *GI_HOME* recursively before clicking the Install button on the summary page.

This issue is tracked with Oracle bug 16196582.

7.3 Other Known Issues for Release 12.1.0.1

The following section contains information about issues related to Oracle Database 12c and associated products:

- [Oracle ACFS and Oracle ADVM May Not Mount After System Restart](#)
- [Issues in Creating Oracle ACFS Volume](#)

7.3.1 Oracle ACFS and Oracle ADVM May Not Mount After System Restart

Rarely, Oracle ACFS and Oracle ADVM devices in `/dev/asm` are set to the root group ID while the udev rules file, `/etc/udev/rules.d/55-usm.rules`, specifies a different group ID. As a result, Oracle ACFS and Oracle ADVM may not mount after system restart.

Workaround:

Edit the `/etc/rc.local` file and add the following entry:

```
/sbin/start_udev
```

Oracle ACFS and Oracle ADVM devices are created with the expected settings according to the udev rules file.

This issue is tracked with Oracle bug 13653789.

7.3.2 Issues in Creating Oracle ACFS Volume

Oracle Automatic Storage Management Configuration Assistant cannot be used to create Oracle ACFS volume with stripe column 1.

Workaround:

Use the `asmcmd volcreate` command or the `ALTER DISKGROUP SQL` statement to create the volume. After the volume is created, you can use Oracle Automatic Storage Management Configuration Assistant to create Oracle ACFS file system.

This issue is tracked with Oracle bug 16347687.

8 Content Specific to Oracle Database 12c Release 1 (12.1.0.2)

The following content is specific to release 12.1.0.2:

- [Preinstallation Requirements for Release 12.1.0.2](#)
- [Installation, Configuration, and Upgrade Issues for Release 12.1.0.2](#)
- [Other Known Issues for Release 12.1.0.2](#)

8.1 Preinstallation Requirements for Release 12.1.0.2

Refer to the installation guides for the preinstallation requirements.

8.2 Installation, Configuration, and Upgrade Issues for Release 12.1.0.2

Review the following section for information about issues that affect Oracle Database installation, configuration, and upgrade:

- [32-Bit Oracle Database Client Installation Fails on Linux x86](#)
- [Locale Issue with SUSE Linux Enterprise Server 11 on IBM: Linux on System Z](#)
- [Oracle ASM Startup Issue on IBM: Linux on System Z](#)

8.2.1 32-Bit Oracle Database Client Installation Fails on Linux x86

The 32-bit Oracle Database Client installation may fail on Oracle Linux 7 and Red Hat Enterprise Linux 7 on Linux x86 systems.

Workaround:

For Oracle Linux 7, install the `glibc-2.17-55.0.4.e17` package.

For Red Hat Enterprise Linux 7, the issue is tracked with Red Hat bugzilla 1150282. Contact Red Hat for a fix.

This issue is tracked with Oracle bug 19028658.

8.2.2 Locale Issue with SUSE Linux Enterprise Server 11 on IBM: Linux on System Z

When you run Java GUI applications, such as Oracle Universal Installer, Database Configuration Assistant, or Database Upgrade Assistant, with SUSE Linux Enterprise Server 11 on a Simplified Chinese, Traditional Chinese, Japanese, or a Korean locale, the characters show as square boxes.

Workaround:

Run the Java GUI applications on an English locale with SUSE Linux Enterprise Server 11.

This issue is tracked with Oracle bug 17075895.

8.2.3 Oracle ASM Startup Issue on IBM: Linux on System Z

Oracle Database installation results in the following errors:

```
CRS-2674: Start of 'ora.asm' on 'nodename' failed
CRS-2679: Attempting to clean 'ora.asm' on 'nodename'
...
...
...
CRS-2681: Clean of 'ora.asm' on 'nodename' succeeded
```

Some of Oracle ASM instances do not run.

Workaround:

Run the following command to start the remaining Oracle ASM instances:

```
srvctl start asm
```

This issue is tracked with Oracle bug 19131165.

8.3 Other Known Issues for Release 12.1.0.2

The following sections contain information about issues related to Oracle Database 12c and associated products:

- [Oracle ACFS and Oracle ADVM May Not Mount After System Restart](#)
- [Error When Running the `acfsdriverstate` Command](#)
- [Oracle Universal Installer Issue on Oracle Linux 7 and Red Hat Enterprise Linux 7](#)
- [Database Smart Flash Cache Error on Oracle Linux 7](#)
- [Intel C++ Compiler Error on Oracle Linux 7 and Red Hat Enterprise Linux 7](#)
- [Oracle ACFS is Not Supported](#)
- [JRE Exception on Red Hat Enterprise Linux 7 on IBM: Linux on System z](#)

8.3.1 Oracle ACFS and Oracle ADVM May Not Mount After System Restart

Rarely, Oracle ACFS and Oracle ADVM devices in `/dev/asm` are set to the root group ID while the udev rules file, `/etc/udev/rules.d/55-usm.rules`, specifies a different

group ID. As a result, Oracle ACFS and Oracle ADVN may not mount after system restart.

Workaround:

Edit the `/etc/rc.local` file and add the following entry:

```
/sbin/start_udev
```

Oracle ACFS and Oracle ADVN devices are created with the expected settings according to the `udev` rules file.

This issue is tracked with Oracle bug 13653789.

8.3.2 Error When Running the `acfsdriverstate` Command

When running the `acfsdriverstate` command for Cluster Verification Utility (CVU), Oracle Universal Installer, or the root scripts, you may encounter a permission denied error if the current working directory is not accessible to the user.

Workaround:

Change the current working directory to a directory where the user running the command has access, such as the user's home directory or `/tmp`, before running the `acfsdriverstate` command.

This issue is tracked with Oracle bug 18364777.

8.3.3 Oracle Universal Installer Issue on Oracle Linux 7 and Red Hat Enterprise Linux 7

On Oracle Linux 7 (64-bit) and Red Hat Enterprise Linux 7 (64-bit), certain tools such as Oracle Universal Installer, Oracle Database Configuration Assistant, and Oracle Enterprise Manager Configuration Assistant cannot display the non-English multibyte character language messages. For example, languages such as Japanese, Chinese, and Korean are not displayed by these tools on Oracle Linux 7 (64-bit) and Red Hat Enterprise Linux 7 (64-bit).

Workaround:

Run the following commands for the Japanese language:

```
mkdir /usr/share/fonts/japanese/TrueType
cd /usr/share/fonts/japanese/TrueType
ln -s /usr/share/fonts/wqy-zenhei/wqy-zenhei.ttc sazanami-gothic.ttf
```

Run the following commands for the Chinese language:

```
mkdir /usr/share/fonts/chinese/TrueType
cd /usr/share/fonts/chinese/TrueType
ln -s /usr/share/fonts/wqy-zenhei/wqy-zenhei.ttc uming.ttf
```

Run the following commands for the Korean language:

```
mkdir /usr/share/fonts/korean/TrueType
cd /usr/share/fonts/korean/TrueType
ln -s /usr/share/fonts/wqy-zenhei/wqy-zenhei.ttc gulim.ttf
```

Next, start Oracle Universal Installer.

This issue is tracked with Oracle bug 19381563.

8.3.4 Database Smart Flash Cache Error on Oracle Linux 7

When using Database Smart Flash Cache on Oracle Linux 7, you may encounter an ORA-439 error.

Workaround:

Download and install the patch associated with Oracle bug 19504946 when it is available on the My Oracle Support website.

This issue is tracked with Oracle bug 19504946.

8.3.5 Intel C++ Compiler Error on Oracle Linux 7 and Red Hat Enterprise Linux 7

When compiling C++ code on Oracle Linux 7 and Red Hat Enterprise Linux 7 with Intel C++ Compiler 12, you may encounter the following errors:

```
/usr/include/c++/4.8.2/ext/atomicity.h(49): error: identifier "__ATOMIC_ACQ_REL" is
undefined { return __atomic_fetch_add(__mem, __val, __ATOMIC_ACQ_REL); }
/usr/include/c++/4.8.2/ext/atomicity.h(49): error: identifier "__atomic_fetch_add"
is undefined { return __atomic_fetch_add(__mem, __val, __ATOMIC_ACQ_REL); }
```

Workaround:

Upgrade to Intel C++ Compiler 13.0.

This issue is tracked with Oracle bug 19583928.

8.3.6 Oracle ACFS is Not Supported

Oracle Automatic Storage Management Cluster File System (Oracle ACFS) is not supported on Oracle Linux 7 and Red Hat Enterprise Linux 7.

Workaround:

Download and install the patch associated with Oracle bug 18321597 when it is available on the My Oracle Support website.

This issue is tracked with Oracle bug 18321597.

8.3.7 JRE Exception on Red Hat Enterprise Linux 7 on IBM: Linux on System z

Oracle Database Client (32-bit) installer and the following tools that use Java Runtime Environment (JRE) on Red Hat Enterprise Linux 7 on IBM: Linux on System z fail with a JDK exception:

- Oracle Database Client (32-bit) installer
- Oracle Net Configuration Assistant
- Deinstallation tool

Workaround:

- Start the Oracle Database Client (32-bit) installer with the `-J-Xnojit` option:

```
./runInstaller -J-Xnojit
```

- Before you run Oracle Net Configuration Assistant, update the `$ORACLE_HOME/bin/netca` script to include the `-Xnojit` option:

```
$JRE $JRE_OPTIONS -Xnojit -classpath $CLASSPATH oracle.net.ca.NetCA $*
```

- Update the Deinstallation tool script, `deinstall.pl` to include the `-Xnojit` option in the JRE command. For example, add the `-Xnojit` option to line 387 in the `deinstall.pl` script as follows:

```
$stoolCmd = $jreHome.$dirSep.'bin'.$dirSep.'java -Xnojit  
'.$archFlag.$debugString." @javaOptions . . .
```

This issue is tracked with Oracle bug 19717149.

9 Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at

<http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit

<http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit

<http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

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